GARDEN AND FOREST.

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A New England Rock Garden.

A BOSTON correspondent contributed to our pages early in the season a series of notes upon some of the interesting spring-flowering plants of his rock-garden, and now he has sent us a series of views of this garden, taken when the Poet's Narcissus was in flower. Two of these views are reproduced in this issue, for the purpose of showing how interesting and attractive a garden of this sort may be made, and how an ugly bit of waste ground may be easily brought to serve a good and useful purpose. The site of this garden, a few years ago, was an abandoned gravel-pit partly overgrown with brambles. A few old trees grew about the borders, and the lower side extended down into the low, wet, peat margin of a pond. The flight of rough stone steps, which appears in the picture on page 439, was carried up the steepest face of the gravel-pit to connect a wood-walk at the lower level with dressed ground above. Large stones, lichen-covered, when such could be obtained, were spread over the surface of the gravel-slopes to hold the soil, which was placed between them, from washing away and to make the "pockets," which are desirable to protect delicate plants from the encroachments of too vigorous neighbors. A few tall-growing shrubs were planted at the top of the now rocky hill to increase its apparent height; and a few low ones were scattered through the rocks to break the surface and avoid any danger of monotony. Then the remaining space has been gradually filled with spring-flowering plants—hardy bulbs of many sorts, hardy ferns, and such native plants as flower before the full development of the leaves on the forest trees, for as these shade the ground, except on one side, it is suited for early flowering plants only. These thrive here and make this small garden a spot of interest and beauty during the six weeks which follow the opening of spring; and then the ferns cover the ground during the remainder of the season, or Sedums or Houseleeks, and other sun-loving plants, on the exposed side keep up the succession of flowers.

The view on page 438, taken from the low ground near the pond, shows a section of the garden open to the southwest. The large tree to the right of the picture in the foreground is a Sassafras, with the deeply furrowed bark admirably brought out. This view shows the manner in which the rocks are arranged to hold the soil placed among them, and to prevent the water from pouring off from the surface. The whole secret of a successful rock-garden is in the manner the rocks are placed. If they are laid in such a way that they offer no resistance to the flow of water away from them, the moisture-loving plants, which properly belong to such gardens, cannot survive our hot, dry summers, but if they are arranged so as to resist the flow of water, they are of great service in increasing the humidity of the soil, not only by preventing the rain-water from flowing rapidly away, but also by checking evaporation. They are of great assistance, too, in forming barriers between different plants and in protecting the weak from the strong, and in keeping deep, cool recesses for the fine roots of Alpine plants. The number and variety of plants which can be grown in a small space, prepared in this way, is astonishing, and thousands of the smaller bulbous plants like Crocuses, the smaller Squills, and Dogtooth Violets, may be tucked away close to the edges of the rocks, or at the points where they join, without in any way interfering with the more prominent occupants of the larger spaces.

Certainly, there is no sort of garden which, in our northern climate, is capable of giving more pleasure than one, whatever its arrangement may be, in which the principal feature is the cultivation of the hardy plants which flower in spring.

The production of staves has been an important industry in the United States for more than a century, and vast quantities of the very finest timber produced in our forests have been consumed in this way. Virginia was for many years the great stave-producing state, but as good Oak became scarce in the accessible parts of that state, the business gradually spread west to Ohio and Indiana. Now Missouri and Arkansas and the region covered by the southern culmination of the Appalachian Mountain system produce the largest quantity. We gather from a recent issue of the *St. Louis Lumberman* some interesting information with regard to this industry. The wood preferred for stave-making is white oak. It is used for tight barrels, except molasses barrels, which are made of cyprus (*Taxodium*) or bass-wood. Barrels used for holding flour, potatoes, apples, sugar and similar commodities are made of elm, ash, red oak and other woods. There are three classes of staves, the classification being based on the methods used in getting them out. These classes are the "split," the "sawed" and the "cut." The first are used for beer, wine and other liquids, and are made from the best white oak. The sawed staves are also made from white oak, and are used in the manufacture of coal-oil barrels, lard tierces, white-lead kegs, well-buckets and other vessels intended to contain liquids. Cut staves are made by machinery, and are put into barrels used for solids. There is, in addition to the great home consumption, a large export of staves to England, and to France, Italy, Spain and other European wine-producing countries. The annual export is now estimated at twelve million pieces. The principal stave markets are New York and St. Louis. New York and New Orleans are the two principal export ports. The importance of St. Louis as a stave-distributing centre is of comparatively recent date, and is due to the exhaustion of the forests east of the Mississippi, and to the great development of barrel-using industries in the West, such as milling at St. Louis and Minneapolis; beer-making at Milwaukee, and especially the wine-making of California, for in all the territory west of the Rocky Mountains there does not grow a tree from which a wine-cask can be made. St. Louis now receives annually between 2,500 and 3,000 car-loads of staves, which are distributed all over the United States and Europe, although large quantities are used in supplying local factories. There are still

immense stretches of stave-timber in the United States; as some of the very best of it is not yet within reach of the railroads, but the vast increase of wine-production in California, and the fact that good stave-timber cannot be found now anywhere in any quantity, except in our Southern states, must have an influence upon the value of southern hard-wood lands, and must in time destroy the forests of Oak in these states, as it has in Virginia and in the valley of the lower Ohio River.

Drives and Walks.—I.

IT is generally thought that in planning a country-place, whether large or small, the main thing to be considered is the situation of the house. Aspect and prospect—the way the house will look to the passer-by or the approaching visitor, and the way the landscape will look from its windows and piazzas—are supposed to be considerations of such paramount importance that the choice of a site may well be made and the house constructed before anything else is arranged. Important considerations these are indeed, yet there is another of quite as much importance—one which must, indeed, be borne in mind from the outset, if aspect and prospect themselves are to be satisfactory in the end. This is the arrangement of the various drives and walks which run through the property. Convenience as well as beauty dictates that the position of the house and its dependencies should not be fixed until this arrangement has been mapped out.

If the grounds are large, and their surface is not perfectly flat and uniform, it may easily happen that the site which seems best to the architect is one where the relative positions of the high road and the entrance-front will be such that no good approach can be designed. For an approach to be good there must be an easy turn-in from the high road; the grade within the gate must be as gentle as possible; there must be no sharp turns, dangerous alike to meeting vehicles and to bordering turf; the house must be well displayed to advancing eyes; the ground must not be so intersected by the line of gravel as to interfere with a beautiful arrangement of its parts, and this line must not be a disagreeable object from the house. Too often in the approach not one of these necessities is fulfilled, although all might have been fulfilled had the house been properly placed. Sometimes even a change in position, so slight that it would not have perceptibly altered either aspect or prospect in general, would have made all the difference between a good approach and a bad one. It is folly, we know, to force a landscape-gardener to lay out a straight road where a curved one would look better, or a curved road where a direct one would be more sensible, and therefore more beautiful; to compel him to run it over a hillock which it might encircle, or down into a hollow and up again when it might pass to one side; to give him no convenient access to the high road except at a point where turning-in is awkward; to forbid him to take in a good point of view which might easily be shown from the drive, or to show disagreeable objects which might be concealed. And yet it would be easy to point to many new places where just such necessities have been forced upon the landscape-gardener by an error in the placing of the house, or where, to avoid them, he is compelled to spend a large amount of money, and perhaps to injure the general effect of the place, in altering the configuration of the ground. When the position of the principal entrance relative to the high road and to the varieties of surface in the ground is fixed, there is nothing left for him but to do the best he can with his approach; this often means something very different from the best that might have been done; and upon the character of the approach may depend the success or failure of the place as a whole.

In places of any size a curved entrance-drive is better than a straight one. Naturally, there may be a case when a wide straight avenue can, with advantage, be made in a direct line through a great estate and leading to a house the architectural majesty of which demands a very dignified approach. But such cases rarely, if ever, occur in America. As a rule, what we call a large place is not large according to English ideas, at least in so far as the ornamental grounds are concerned; and a house which we consider stately, an Englishman would be apt to call merely picturesque. Almost without exception, therefore, wide straight approach roads are inadmissible in this country except in public parks; a curved road is better, because less pretentious, easier to build and to drive upon, unless the land be perfectly flat, more beautiful in itself, more harmonious with the character of our buildings, and less strikingly artificial.

But as all roads and walks are palpably artificial, no matter how they may be designed or of what material they may be composed, it is not good art to make too palpable an effort to conceal the fact. The real reason for the existence of the drive—its utility—should always be acknowledged to the eye as well as practically secured. This means that, though the approach is curved, it should not circle about to an excessive degree, irrationally increasing the distance that must be traversed before the house can be reached, and, when its course is overlooked from the house, wearing an unmeaning, wandering look. English writers on landscape-gardening often deplore the fact that in the effort to make a display of magnitude in the estate or to show various effective points of view, an approach has been so laid out that it is positively irritating to the visitor; when he thinks he is near his destination he finds himself carried away again, and sometimes this process is repeated several times. In addition to the pretentiousness and inconvenience of such an arrangement it injures the place as a whole, for there is no more fundamental principle in the art of gardening than that the fewer the roads and walks the better, and the shorter their course, consistent with convenience and good lines, the better, too. A line of gravel is not a beautiful object in itself, it is conspicuous on account of its difference in color from the surrounding verdure; and wherever it comes it cuts a landscape composition in two as with a knife. Its virtue lies in being at once as useful and as inconspicuous as possible.

Old Mission San José Gardens.

CALIFORNIA has but few old gardens, although the Bidwell grounds at Chico, the Fox Nurseries at San José, and some of the old Oakland and Sacramento homesteads date back to the early fifties. Still older, belonging to a different régime, are the old Mission gardens of the last century. Some of these are still kept up; others have fallen into decay, but all are full of a tropical beauty of their own, because the Palm, Olive, and the Vine so much predominate. One old estate, within thirty-five miles of San Francisco, combines in a remarkable degree the charm of the Spanish gardens of the eighteenth century, and the charm of the early American gardens. I refer to the Gallegos grounds, near the Mission San José, planted chiefly by the Beards and Elsworths, thirty and forty years ago.

The estate of Juan Gallegos includes six hundred and forty acres of vineyard, besides large orchards and extensive pastures. The twenty acres or so that immediately surround the old mansion show as fine a lawn and landscape of native trees as can be found in California. Besides this, there are some trees which were planted by the Mission padres, old Pears and Olives of sixty years growth. There are avenues of Figs, and groves of Olives and Oranges, all large trees in full-bearing. There are many Palms, large Pines, and choice specimens of deciduous trees. On the hill slopes, east of the plateau, at the base of Mission Peak, where the home-grounds are situated, is an old avenue of Spanish-planted trees, Pears and Olives of nearly a century's growth, which rank among the finest relics of Mission gardens left in California.

E. L. Beard, a man of great ability and energy began farming in Santa Clara Valley at this old Mission in the days of '49-'50. He established a nursery here in 1852, sending an agent to the Atlantic states for seeds, scions and young trees, which were taken to California by way of Panama. In 1853 the ordinary price of a one-year-old Cherry, Peach or Pear tree was five dollars, and those who bought, and set out orchards, found that, in 1857 and 1858, the fruit brought twenty-five cents and more per pound. Mr. Beard, and his step-son, Henry Elsworth, developed an orchard and wheat-farm which extended over an area of two thousand or more acres, in and about the Mission San José. Their homestead tract, where plantings of ornamental trees began early in the fifties, was the tract that is now the heart of the Gallegos estate. We have seldom had farmers on the Pacific coast who showed the intense love of beautiful trees that Mr. Beard always did. His groves were on rich, well-watered and sunny slopes. To these he brought specimens of nearly all the native conifers of California, and of many of our finest deciduous trees and ornamental shrubs. His eastern connections enabled him to secure, and he planted here, all the Spruces, Firs and Pines, to be had in eastern nurseries. He also had Australian and Japanese correspondents many years ago, and planted Acacias, Japanese Persimmons, and other imported trees, ten years before any one else had them. He planted a great many Olives and Oranges in groves and avenues; large Fig groves, and many Palms. Chestnuts, Walnuts, and other nut-bearing trees were grouped

near bridges across the stream, and, behind his residence were large fruit orchards and vineyards stretching down the valley.

At present, after more than thirty years of uninterrupted growth, under most favorable conditions, the trees that surround the lawns and "opens" of the place are notable for size and beauty, even in California, and they attract many visitors. Mr. Juan Gallegos, the present owner, is a wealthy Spanish gentleman from Costa Rica, educated in England, and now one of the largest and best known of viticulturists in the state. He has greatly extended the ornamental grounds, and especially delights in plantations of Palms of various sorts, particularly the Date Palm, so that the estate is becoming more and more tropical in its appearance. He is passionately devoted to the old trees, planted by his predecessors, and to the still older Pear and Olive trees planted by the Spanish padres. The Orange-groves are now in heavy bearing condition; the Olives begin to yield well, and the vineyards are so extensive that he has sometimes carried a stock of one million gallons of wine in his cellars.

An interesting fact in reference to the Olive in this region deserves record. The trees of the old avenue of which I have spoken are of the Mission variety, so-called, the kind brought to this coast by the padres, and variously identified since with sorts still cultivated in Spain. The trees planted by the padres here, however, differ much in growth, and are probably seedlings of the Mission variety. Some ripen early, others are very late, and some are much better bearers than others. The old Pear trees were of two sorts, a small, early pear of russet color, ripening about with the Madeleine, and a large, bronze-colored, late, coarse pear. The grapes were all of the old Mission sort, the same grape that grows to-day in the vineyards of the lower Rio Grande, and is so famous in the southwest as the "El Paso Grape." I am told by an old pioneer who knew the Mission San José, before the conquest of California, that the quaint old Spanish garden contained in its exact centre a seedling Apricot tree, which was an object of superstitious fear to the Indian neophytes, for they were taught that its fruit was the fruit of "The Forbidden Tree." They always went by it with bowed heads, and crossing themselves. On three sides of the old garden towered an immense wall of *Nopal*, or Mexican Prickly-Pear, with adobe buildings, walls, and the church on the other side.

Niles, Cal. *Charles Howard Shinn.*

Notes Upon Some North American Trees.—IX.

LYONOTHAMNUS ASPLENIFOLIUS, Greene.—This interesting tree was discovered by Mr. Barclay Hazard on Santa Cruz Island, one of the Santa Barbara group, in 1885, and was described by Mr. Edward L. Greene in the *Bulletin of the California Academy of Science* (i., 187, and ii., 149, *t.* 6). Mr. Greene visited the island a year later, and found that "this tree is no rarity on its native shore. There are a hundred fine groves of it distributed up and down the thirty miles of the island's northward slope, individual specimens often as high as thirty-five or forty feet. The wood, close-grained and hard, is called iron-wood by the men of the island. No other small tree of our coast equals this in grace of form and beauty of foliage. The flowers, too, are quite showy in their season, the larger corymbs often measuring a foot in diameter." Mr. Brandegee found Lyonothamnus last year on Santa Rosa, where "the trees are small and often distorted by the wind. This species always forms small groves of a hundred, more or less, trees. It sends up several trunks from one cone, and the whole grove probably is connected underground by its roots" (Brandegee in *Proc. Cal. Acad.*, 2 ser., i. 2, 210).

The genus Lyonothamnus was established by Professor Gray (*Proc. Am. Acad.*, 2 ser., xii., 291) for a shrubby plant, discovered by Mr. W. S. Lyon, on the island of Santa Catalina, in 1884—*Lyonothamnus floribundus.*

Lyonothamnus is the first representative of the Saxifrage family among the trees of North America.

TERMINALIA BUCERAS, Hemsley.—This tree was detected by Mr. A. H. Curtiss, on Elliot's Key, at the time of our visit to southern Florida in the spring of 1886; and a few specimens, forty or fifty feet high, were found in full bloom on the 19th of April. It is the *Bucida Buceras* of Linnæus, but the genus Bucida having been merged into Terminalia, the plant becomes *Terminalia Buceras*, and the author who first used this combination of names is the authority for it. The author in this case, unless some earlier application has escaped me, is Mr. Hemsley, in "Bot. Am. Cent.," i. 402. We have never been able to find a good seed of this tree in any of the herbaria of this country or of Europe, or to procure one from any of the West Indian or Central American botanists, although it is a common and widely-distributed littoral species. The plate, therefore, for the North American Silva lacks the figure of the embryo, an omission which may still be rectified could a single perfect seed be sent to me.

147. EUGENIA LONGIPES, Berg.—This species, as it grows on No Name Key, in Florida, the only station known for it in the United States, is a slender, spreading bush with stems six or eight feet high, and with no tendency to assume arborescent habit. I propose, therefore, unless I can learn that it becomes under more favorable conditions really a tree, to omit this species entirely from the Silva.

ARALIA SPINOSA, L.—This species must find a place in the Silva. I have seen it on the western slopes of the Big Smoky Mountains of Tennessee, growing to a height of thirty or thirty-five feet, with a straight, clear trunk, eight inches in diameter, and stout, wide-spreading branches.

148. EUGENIA PROCERA, Poir.—Two Florida trees have been confounded under this species. The larger of these, a tall tree, almost entirely confined, within the United States, to a single hummock on the shores of Bay Biscayne, east of the mouth of the Miami River, with scaly red bark, narrowly-acuminate, coriaceous, shining leaves, which are contracted into a long, blunt point, small flowers in axillary clusters, and small, pea-shaped scarlet fruit, has already been described in GARDEN AND FOREST (vol. 2, f. 87) under the name of *Eugenia Garberi*, a name bestowed upon it in memory of its discoverer.

E. procera is a much smaller and a much more common and more widely-distributed tree in Florida, occurring on nearly all the Keys. It is rarely more than twenty feet high, with a perfectly smooth, ashy-gray bark, broader, much thinner and duller leaves than the last, larger flowers, and larger fruit, which is first yellow and red, finally becoming black when fully ripe.

Eugenia Garberi should stand in the catalogue immediately after the last species.

153. NYSSA CAPITATA, Walt.—An older name for this species is that of Marshall (Arbustum Americanum)—*Nyssa Ogeche*, published in 1785, or three years earlier than that of Walter. The orthography of Marshall's name, although it is not that now used for the river Ogeechee, had best be retained.

154. NYSSA SYLVATICA, Marshall. The various forms of Nyssa with clustered, fertile flowers borne on a long peduncle, were all united in the Census Catalogue under the name of *Nyssa sylvatica*, the Linnæan species *N. aquatica* being held to include both a form of this plant and the very distinct *N. uniflora*. It may, however, be convenient to retain as a variety the Water Gum of the south Atlantic States, which would then become *N. sylvatica* var. *aquatica*. This, owing to the fact, probably, that it grows in shallow ponds where the trunk is surrounded with water during a large part of the year, is generally a smaller tree; and these conditions would account also for the enlarged base of the trunk, as the stems of aquatic trees display generally this peculiarity. The leaves are often lanceolate or orbicular rather than oval or obovate, the form they generally assume on upland trees, and the peduncles are inclined to be rather shorter. These characters are not constant, however, and it is the manner of growth and the general appearance of the Water Gum rather than any characters apparent in the herbarium which must be relied on to separate it from the Tupelo of the New England coast and the Black Gum of the Alleghany Mountains and the Valley of the Mississippi, as these three distinct-looking trees are connected together by innumerable intermediate forms.

162. GENIPA CLUSIÆFÓLIA, Griseb. — This is a common, littoral plant on several of the south Florida Keys. It shows, however, no tendency to become a tree or to grow to a greater height than five or six feet, and should be dropped, therefore, from the North American Silva.

167. ARBUTUS XALAPENSIS, H BK.—Professor Gray, in his supplement to the "Synoptical Flora of North America," 2 ed., ii. 1, 396, proposed for this Arizona tree the name *A. Xalapensis* var. *Arizonica*. It is not easy to connect this plant, with its thick, white, scaly bark on the old trunks and thin, narrow, glabrous leaves, with the Mexican *A. Xalapensis*, which is known to me only through herbarium specimens, and through the figure in Hooker's "Icones" (t. 27); and it seems impossible to understand properly either the Arizona or the Texas Arbutus without more detailed information with regard to the Mexican species of this genus than is now available.

168. ARBUTUS TEXANA, Buckley.— Professor Gray proposed (*l. c.*) for this plant the name *Arbutus Xalapensis*, var. *Texana*. It was believed formerly to be confined to Texas, but two years ago I found a single plant on the Sierra Madre, near Monterey, in Mexico, where Mr. Pringle has since collected it. It may be expected, therefore, to be a widely-distributed Mexican species at the northern limits of its distribution in central Texas. The specimen collected by Parry and Palmer (No. 562) near San Luis Potosi, and referred to *A. Xalapensis* is certainly identical with the Texas plant. *C. S. Sargent.*

Entomological.

The Periodical Cicada.

A CORRESPONDENT in Essex County, New Jersey, writes that when the seventeen-year Locusts visited his region last he discovered that these insects were by no means as harmless as they had been described. Farmers were assured that they might prune orchards and forests a little, but would inflict no serious loss; but the fact was that many of the trees in a young orchard, set out the year before, were killed outright, and most of the remainder were injured beyond recovery. He adds the common belief that some of this army will appear a year or so ahead of schedule-time, and some may follow later, but thinks the main host will appear in 1894, and he adds that the years '92 and '93 will be dangerous seasons for setting out young orchards.

This letter expresses fairly well some of the beliefs on the subject of this, perhaps the most interesting of American insects. The fact that it appears every seventeen years is stoutly maintained by some, and as stoutly denied by others. Cases are cited of their appearing in the same localities at shorter periods, while in other regions the seventeen-year record is unbroken. To the scientific entomologist the problem has long been a settled one; but, somehow, the explanation has not become generally known. As a matter of fact, instead of one, or two, or three, broods, which are grudgingly admitted as possible by ordinary observers, we know positively twenty-two distinct broods, each brood with its own peculiar distribution, and each of them well recorded for several periodic appearances. Another fact not generally known is that in the more southern regions eight of these broods have become accelerated, from climatic causes, so that they appear at intervals of thirteen, instead of seventeen, years. These broods are just as true to their thirteen-year period as are the others to their seventeen-year term. In some sections the two varieties—for the thirteen-year brood is smaller than the other—overlap, and sometimes it happens that a seventeen-year and a thirteen-year brood will occur at the same time in the same place, as in 1885 broods vii. and xxii. appeared together along the Mississippi Valley. Of course, in such regions, there will be a brood thirteen years from that time, and another four years later. Such facts, incorrectly understood, give rise to the popular ideas of an irregularity in appearance. So, also, where two, or even more, broods occur in the same region, there will be an apparent irregularity in dates. This is instanced during the present year in Washington (brood viii.), where the cicada last appeared in 1885 (brood xxii.), only four years ago. A very full account of all the broods is given by Professor Riley in Bulletin 8 of the Division of Entomology, United States Department of Agriculture, and a great deal of additional information in the report of the United States Entomologist for 1885.

New York is credited with six broods: 1889 [viii.], 1894 [xii.], 1898 [xvii.], 1899 [xix.], 1900 [xx.] and 1902 [xxii.]. It will be seen that for three years in succession some part of New York will be visited by the cicada.

New Jersey is credited with four broods: 1889 [viii.], 1894 [xii.], 1898 [xvii.] and 1902 [xxii.]. New York thus has all the broods appearing in New Jersey, and, in addition, two others.

The New Jersey broods do not overlap—*i. e.*, there seem to be no places covered by two broods, and I have therefore received letters in abundance, and seen numerous notices in local journals, denying the appearance of brood viii. this year.

To be somewhat more specific, brood viii. (1889) has appeared in Long Island, New Jersey, along the Atlantic Coast to North Carolina and westward through Pennsylvania. The brood becomes scattering and small in number along the Atlantic Coast, and is very generally overlooked. In New Jersey it appeared in small numbers at the Palisades, at Princeton, Palmyra, Red Bank, and for some little distance along the line of the Cape May Railroad. Mr. Angell, a very reliable entomologist, assures me that he heard the insects at Orange, but I received no specimens. Long Island is the only New York locality recorded.

Without mentioning other broods, it only needs to be added here that the largest of the seventeen-year race, brood xxii., which covers the greatest territory and is also very numerous, does not appear here until 1902. In New York it appears only on Long Island, extends in small detached areas through middle New Jersey, until, in Pennsylvania, the main army is struck. It is somewhat doubtful whether the brood in 1902 will be very numerous on Long Island, for the sparrows assembled in force in Prospect Park when the Cicadas appeared, and spared very few indeed. So well was the work done that in a search for eggs I spent an entire day along the line of their appearance and found but a single punctured twig!

Brood xii. (1894) appeared last in 1877 and is a very numerous one. It extends along both sides of the Hudson as far north as Troy, and crosses Long Island. They were in 1877 most abundant on Staten Island, less so on Long Island, and I observed them within the limits of New York City. In New Jersey they were very abundant nearly all over the State, and this brood is the one most generally remembered by farmers, and to which most of the letters received refer.

The larva of the Cicada lives underground and subsists by puncturing the roots of trees and sucking their juices. The rate of growth is so slow that the damage done is never perceptible, and need scarcely be considered. The mature insect takes its food in the same way, puncturing branches only instead of roots, and its damage in this respect is very small. The real injury is caused by the female in ovipositing. For this she selects, preferably, the tender terminal shoots of trees, shrubs, or, where they appear in large numbers, even low bushes, and makes a series of deep longitudinal slits into which the eggs are deposited. Where the twig or branch is small, it soon loses vitality, and eventually dies. On large trees this amounts to a severe pruning only; but in small, nursery trees or a young orchard, it frequently, if not generally, means the death of the tree. The advice not to put out young trees just before "Locust year," is sound. In New Jersey this advice should be remembered for the 1894 brood, and so too the farmers along the Hudson should take warning. This is really the only brood occurring in damaging numbers in these States. No practical remedies against these periodical pests have been suggested.

Rutgers College. *J. B. Smith.*

Foreign Correspondence.

London Letter.

THERE are certain variegated and golden-leaved trees and shrubs that display much beauty of foliage in spring and early summer; but, after exposure to strong sunshine, they are often anything but beautiful; indeed, nothing in a garden is more unsightly than a tree or shrub with sunburnt foliage. There is now such a great demand for these gold and silver variegated trees and shrubs that every tree-nursery is crowded with them, and the nurserymen are always alert to add some novelty to their lists. In many cases I have asked for a Catalpa, but was told it was not kept in stock, while I could have any number of the golden-leaved variety. The same is true of the beautiful pale-green *Acer Negundo*. One who orders it will probably get the variegated form, now too common everywhere. There are many people who do not see the

least beauty in green-leaved trees, though the wide range of greens, from that of the Evergreen Oak to the tender green of the Negundo, is capable of producing far more pleasing effects in garden-scenery than a superabundance of bright gold and silver foliage.

The newest addition to gold and silver-leaved trees is the golden variegated Negundo, shown before the Royal Horticultural Society last week. Though it did not find general favor with the committee, it is interesting as an ornamental tree because its foliage is less glaring than the common silver-leaved kind. The yellow variegation is good, and blends pleasingly with the green of the leaf, and, no doubt, in habit of growth and vigor, it is identical with the older sort. It has been exhibited three or four times, and on each occasion its merits have been at once compared with its more showy relative. But Mr. George Paul, who showed it, tells me that those who see it in the nursery are much pleased with it, and that it is selling well, which, after all, is the test of the popularity of a novelty. Another new golden variegated shrub of decided value is a variety of *Ligustrum ovalifolium*, named Elegantissimum, which is very different, and much superior, to the older yellow-margined kind. The leaf of the newer variety is larger, of thicker texture, and the broad golden zone is more pronounced. It, moreover, keeps its color throughout the season. It was one of the most striking things shown by Messrs. Veitch in their great collection of ornamental trees and shrubs from their Coombe Wood nursery. Among other trees of this character at Coombe just now is the golden variety of your Hop-tree, *Ptelea trifoliata*, which is quite a cloud of soft golden-yellow, and, of course, it retains the picturesque umbrageous growth of the typical form. This golden variety is different from the golden variegated form, of which the late Charles Hovey sent me some specimens several years ago. In this, the leaflets are in most cases half green and half pale yellow, which, no doubt, would be effective on the tree, but I have not seen this form here yet.

Of the shrubs in flower at Coombe the most noteworthy, perhaps, are *Eucryphia pinnatifolia* and *Spiræa Bumalda*, the first because of its rarity, the other on account of its novelty, for, though it is not absolutely new, it is yet but very little known. The Eucryphia is a Rosaceous shrub from south Chili, introduced about a dozen years ago by Messrs. Veitch, and, like some other Chilian plants, such as Darwin's Barberry, *Buddleia globosa*, the Fuchsias and the Pernettyas, has proved quite hardy in these islands. It grows about a yard high, the numerous branched stems being clothed with deep green pinnate leaves. The flowers recall those of the large-flowered *Philadelphus grandiflorus*, having four broad, white petals and numerous stamens spreading out like a broad tassel. I do not suppose it would be hardy enough to stand your winters, but it is worth green-house treatment. The little *Spiræa Bumalda* is quite a gem here among flowering shrubs, and, although it is scarcely different in flower from the common *S. callosa*, its neat and dwarf growth, rising only about two feet high, tends to make it very popular, and in some of the nurseries it is a difficult matter to maintain a stock equal to the demand. The ordinary form of it has a dense, flat flower-cluster, pale pink on first opening, getting darker later; but this week Mr. Anthony Waterer sends me a specimen of a new variety he has in his nursery, the flowers of which are a deep crimson, richer even than the Atrosanguinea variety of *S. callosa*. It is quite worthy of a distinct name, and a good one would be Fulgens. Of other Spiræas now in flower there is none so pretty as the variety of *S. hypericifolia*, known as Flagelliformis. It is much more floriferous than the type, as its long and slender, curved shoots are perfectly wreathed with small clusters of white flowers. I rank it among the choicest of flowering shrubs, but it is rarely seen. The plants I saw came from Transon's, of Orleans, where it is largely grown. Another first-rate shrub, in bloom now, is the old *Hypericum oblongifolium*, from the Himalayas, which is quite hardy here, and never fails to assert itself in an attractive way every August. It is a thin-growing plant, about two and a half feet high, and has numerous clusters of large cup-shaped flowers of the richest yellow. It is a beautiful companion shrub to the showy *Hydrangea paniculata grandiflora*, which is now expanding its huge clusters of snow-white blossom in the open air. The two group well, the Hydrangea as a centre mass, then the Hypericum, and outside that the Rose of Sharon (*H. calycinum*), which forms a neat margin to a shrub group.

The Catalpa is, for the time, the glory of many an old garden. I say "old" because you very seldom see it planted in a new garden, except, perhaps, the golden-leaved variety, which, however, is generally cut down periodically so as to get large and vigorous foliage. In the old suburban gardens, such as Sion, Claremont, Cænwood and Kew, the Catalpas are wonderfully fine this year, the great spreading trees being crowded with clusters of white bloom. The common kind is your *C. bignonioides*, which is hardier than the Japanese *C. Kæmpferi* which has the finest leafage. *C. speciosa* promises to be hardier even than *C. bignonioides*, and in some nurseries it is being propagated in preference. It is quite distinct enough in growth to enable one to single it out when growing among the common kind. There is a good deal of talk here about the new hybrid Catalpa of Mr. Teas, described and figured in a recent number of GARDEN AND FOREST, in an article which has been copied into English journals. Its rapidity of growth, its vigor and floriferousness indicate a first-rate ornamental tree, and we hope to see it soon on this side. It is so seldom now that a new flowering hardy tree is introduced that it is quite a red-letter event.

Bulbs are, of course, now engaging the attention of gardeners, and I am reminded of this by the multitude of trade lists which the mails are carrying. My table is strewn with catalogues from all quarters, the Hollanders being particularly attentive in this respect. At one time you rarely saw a Dutch bulb-grower's list, but now each grower seems anxious to impress upon you the fact that it is folly for English people to buy their bulbs through the seedsmen here when they can get the same from him at wholesale price. The bulb trade with our nurserymen and seedsmen is not as profitable as it used to be, as the auction sales tend to keep prices low, but after all, really fine bulbs are more certainly secured through the best houses at home. The nursery and seed trade naturally resent the innovation of the Dutch grower in sending his catalogues broadcast in this country, but it has had a beneficial effect for those who habitually buy their bulbs from tradesmen at home.

London. *W. Goldring.*

Cultural Department.

Shrubs with Conspicuous Fruit in August.

IN this latitude the month of August does not afford a great abundance of showy-fruited shrubs and trees. Of the economical or domestic fruits few are conspicuous in color, and these are chiefly early red and yellow varieties of apples and plums. As the fruit of these early kinds is not left on the plants to be admired, they do not come under the head of ornamental plants. But the coloration of many varieties of fruit in September and October certainly adds much to the autumnal beauty of New England landscapes.

Among all the handsome-fruited shrubs grown for ornament, none can surpass the Cranberry Tree (*Viburnum Opulus*) when well laden with fruit. This plant was mentioned as having noticeable fruit in July, and, as August advances, the berries, or drupes as they are called botanically, become bright red and remain brilliant through the autumn. The fruit of the Arrow-wood (*Viburnum dentatum*), of which the birds seem very fond, ripens about the middle of the month. It is blue in color and is borne on erect terminal cymes. This is followed by *Virburnum molle* which, though a more southern species, is quite hardy here. The plant, as well as the fruit, closely resembles *V. dentatum* in general appearance, but the fruit is usually somewhat larger.

Virburnum pubescens and *V. acerifolium* have oval blue-black fruit which is not particularly showy. The Wayfaring Tree (*V. Lantana*) holds its ripe yellow or red drupes until near the end of the month, when they lose much of their beauty by becoming dull and black. Towards the end of the month the broad cymes of the common Elder (*Sambucus Canadensis*) have become fully ripe and dark purple or black, and the branches bend over with the weight. The berries remain on the plant for a considerable time, and on this account, as well as for its handsome white flowers, it is very ornamental in shrubberies. A yellow or golden-leaved variety is very much admired by many, and its fruit is lighter in color than the type.

There are several species of Dogwood which are interesting on account of their fruit during the month. The fruit of *Cornus alternifolia* is blue-black and will remain on the plants for many weeks, if not devoured by the birds. It is a shrub more interesting for its succession of horizontally growing branches and neat habit than for beauty of fruit. The bluish-white fruit of *Cornus circinata* is generally too much scattered to be effective.

Cornus stolonifera is a handsome and pleasing plant, having deep-blue or metallic lead colored drupes, the color being somewhat faded or paler on the side exposed to the sun. They ripen from the middle to the end of the month, and with

those of the next species may remain on the bushes for some time. This species is worth planting for its conspicuous red stems, which are especially noticeable towards the end of winter, as well as for the profusion of white flowers which it bears in June. The silky Cornel (*C. sericea*) does not generally ripen its fruit until the end of the month, and in some situations not until September. In the Arnold Arboretum and vicinity the bright-blue fruit is produced in great abundance. *Cornus paniculata*, which is one of the most slender of the native shrubby species, bears a profusion of delicate white flowers in June followed by pale white fruit about the end of August.

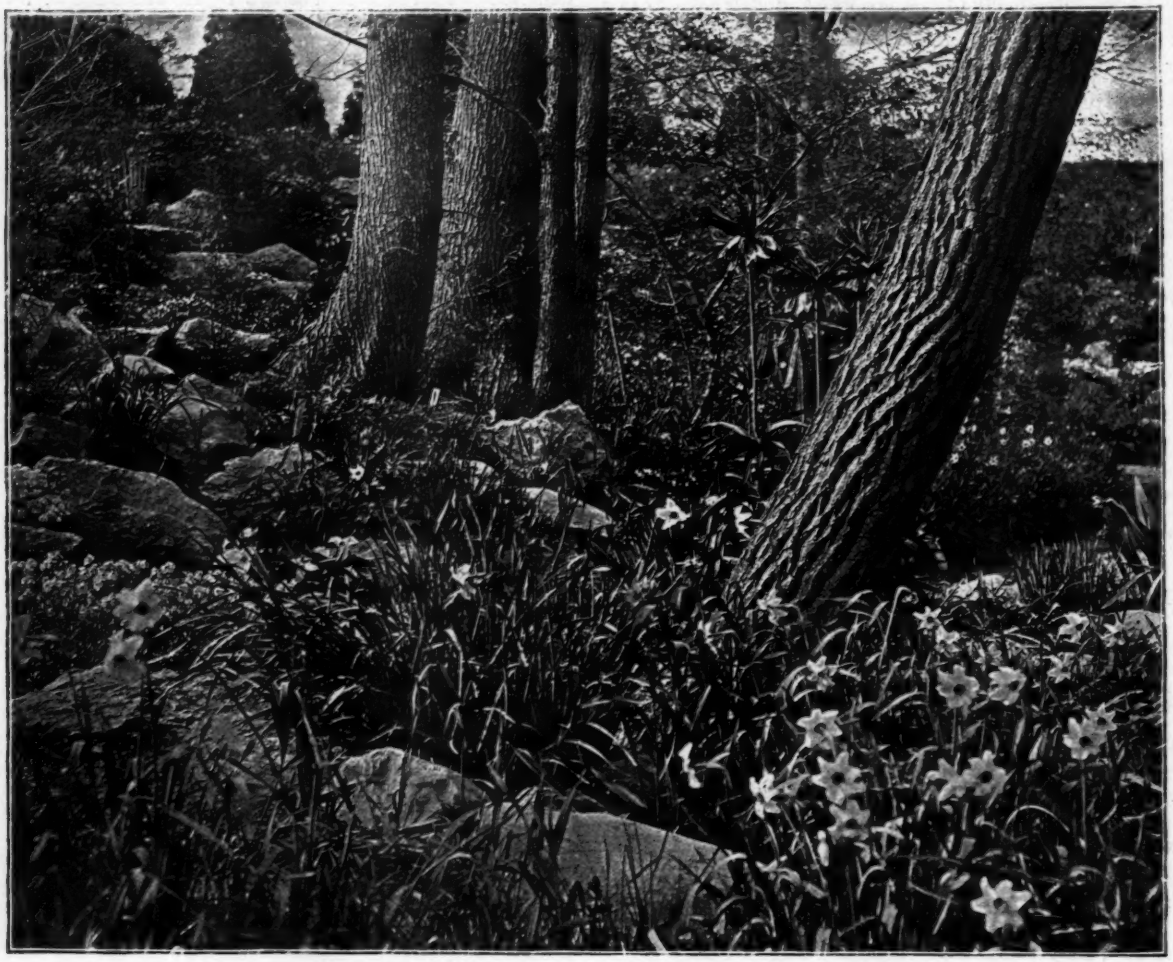
If only one-fourth of the yellow early spring blossom of the Cornelian Cherry (*Cornus Mas*) developed into ripe fruit, the plant would again be a most beautiful object from the middle to the end of August. The drupes are oblong, from three-fourths of an inch to an inch long, and deep orange or bright scarlet, or cornelian colored (whence the common name), when fully ripe. They are edible, though somewhat acid, and in parts of Europe are made into marmalade and used in other ways. Unfortunately, in this latitude, even large plants bear very little fruit, and it drops to the ground almost as soon as matured. *Cornus sanguinea* is another European and Asiatic species sometimes planted in our gardens. It is a close, compact shrub, which will grow eight or ten feet high, and it bears small, terminal cymes of almost black, and not very ornamental, fruit.

Enonymus nanus (*E. angustifolius* of some catalogues), a native of the Caucasus, is the only species of the genus which fully matures its fruit here during this month. This is a neat, small, slender-twigged, partly trailing shrub, from two to three feet in height, with deep green leaves, one or two lines wide and from one to two inches in length.

The fruit ripens early in the month, when the purplish pods open, disclosing the seeds enveloped in an orange-colored aril. This little shrub is quite hardy at the Arboretum, and is excellent in rockeries or for the borders of shrubberies.

The smooth Sumach (*Rhus glabra*) throughout the month bears velvety, crimson fruit, which is often collected for use in making vinegar or as a substitute for lime juice. It is not such a tall growing species as the Staghorn Sumach, which, in some respects, is to be preferred for planting in groups.

The well-known Snowberry (*Symphoricarpus racemosus*) ripens some of its large, white berries during the month and at the same time continues blossoming. Another plant with the same habit of flowering is the Alder Buckthorn (*Rhamnus Frangula*), which continues to produce its ripe, shining, purple-black and inconspicuous flowers from July until well into the autumn.



A New England Rock Garden.—See page 433.

Except *Rosa rugosa*, which ripens first, *Rosa Engelmanni*, recently described and figured in these pages (vol. 2, f. 121), and *Rosa acicularis* are the earliest species to become conspicuous with fruit in the Arboretum. The bright red fruit of *R. Engelmanni* especially is large and attractive.

Fruits of other species of roses also assume bright colors during this month as well as some species and varieties of Barberries. But as they are not always fully matured until September, and remain on the plants for a considerable time, they deserve mention later.

Jamaica Plain, Mass. *J. G. Jack.*

Memoranda From a Northern Garden.

RHUBARB is an easy plant to grow, and market-gardeners find ready sale for the leaf-stalks in spring-time, when there seems to be a very general craving for sharp, pure acids of vegetable origin. It does not take much time or much expense to establish a bed of this plant. The old-time fashion of trenching and deep intermixture of manure is as needless as with Asparagus. A coating of good stable manure, three to four inches thick, well plowed under, is sufficient. Strong, single eyes set this fall after such preparation, four feet each way, will make plants which will shade the whole ground the next fall, and be ready for cutting the succeeding spring. From such a bed I have cut ninety-three stalks which together weighed 100 pounds.

A New England Rock Garden.—See page 433.

Should Asparagus seed be planted deeply, as often advised —say at the bottom of a hole six inches deep? It will come up, but, as with all seed too deeply planted, it will not grow so vigorously as from shallow planting. But about the cutting? Must there not be deep planting to get the white butts required in most markets? Not necessarily; ridging with the plow at the end of the second season's growth will accomplish the same end. If the hills are four feet asunder, both ways, the double mouldboard-plow will give either ridges or hills, as desired. In cultivation during the summer, after cutting is over, these are somewhat leveled; but are easily renewed at the last working, previous to which it is well to give a shovelful of manure to each hill.

Is it not a mistaken notion that all but fruits of the highest dessert quality should be disparaged by horticultural writers? It is safe to say that much more than one-half the crop of our tree fruits (excluding the Citrus family) is cooked before it is eaten. Some of the best for cooking are scarcely eatable in the raw state. Is it not significant that the Oldenburgh apple brings about as good a price as the Gravenstein in many if not in all our markets? Yet the former is strictly a culinary apple. But besides this, is the consideration that many of our choicest dessert varieties are either shy-bearers or very local as regards success; while others are unusually susceptible to the inroads of insects and fungi? Productive sorts of handsome appearance and fair medium quality are, in my opinion, the most profitable to plant. The pains-taking amateur, who is not thinking of profit, may find some pleasure (mixed with a good deal of vexation) in cultivating what are rightly styled "fancy" sorts.

It is the fashion to disparage the quality of Russian Apples, and I observe that our government pomologist, Mr. Vandeman, follows this fashion in his recent report. But in this he is widely at variance with all those who have had the longest and most complete opportunity of testing these apples. It will take a good while yet to sift and thoroughly test the more than 300 varieties that have been introduced to this continent from eastern Europe within the last twenty years. Suppose a similar number of the best American varieties had, within the same time, been on trial even in so comparatively small a country as New Zealand, would not a large proportion have been condemned? But probably others would find acceptance and prove of great value. It has been abundantly shown that the apples of western Europe and their American seedlings are not suited to our colder states and Canada, where almost the whole Russian list are at home. When we come to consider dessert quality alone, I think a sufficient number of Russians are already known to possess that quality to a very encouraging extent; while in vigor of growth, early and free bearing, size and beauty of fruit, they decidedly excel most American apples. Their great lack is in long keeping.

This is, no doubt, due to the fact that the Russian orchard region lies about 600 miles north of our northernmost settlement. There the growing season is proportionally short, and a short autumn is quickly followed by steady cold weather. But from these Russian fruits it is highly probable that American seedlings will appear which will supply this single lack.

It is conceded that in climate the eastern coasts of Asia and America are much alike, and many fine species and varieties of trees and plants from northern China and Manchuria already flourish among us. I am inclined to believe that we shall yet find something of value to us among the fruit trees of the same region. At any rate, we may hope that it will yield "iron-clad" species and varieties which will prove useful in modifying and improving our native species, and the species of northern Europe. What a magnificent field for work is here opened for the young and ambitious staff of our experiment station! They should not hesitate a moment in entering upon it with energy and persistence.

Newport, Vt. *T. H. Hoskins.*

Seasonable Hints about Foliage Plants.

AS the cooler nights and heavy dews of Autumn are at hand some changes in treatment will be found beneficial to this class of plants, particularly as regards watering and syringing, for some of them will suffer more from carelessness in these operations at this season than they do in the winter, when the stronger fire-heat removes the moisture more rapidly. The better plan is to give water in the morning, and on most days to syringe at the same time, simply dampening the walks and benches in the afternoon, if the air seems too dry, so as to avoid the excessive condensation of moisture on the foliage during the night. Such condensation is decidedly injurious to many of the more delicate Palms, and causes the tips of the leaves to decay, and Pandanus suffers in the same way. *Pandanus utilis* and *P. heterocarpus* (otherwise known as *Pandanus ornatus*) will be found particularly susceptible to injury from over-watering, and, consequently, water should be given sparingly, both at the root and overhead during the short days of the year.

On the other hand, Caladiums will still be in full growth, and when in this condition should receive a copious supply of water at the root, with an occasional application of liquid manure to increase the size and heighten the coloring of the leaves. If intended for exhibition they should be given plenty of air, so that they may be able to stand changes of atmosphere without the necessity of staking each leaf to prevent its falling down on the pot, as the careful arrangement of a small forest of stakes in a specimen of this class (or any other) will not prove a point in its favor when examined by competent judges.

Most of the Marantas will yet be in active growth, and will take a liberal supply of water, but as the growth becomes slower, the allowance should be slightly diminished. They should not be allowed to get very dry, however, or a loss of foliage will surely result, and it should be remembered that a moist atmosphere and a shaded house are among the requisites for the successful cultivation of most of them, with the possible exception of a few of the stronger constitutioned sorts like *M. zebrina*, which grows very well out-doors in the summer as a vase plant, if placed in a somewhat sheltered position. With all of the above-mentioned, and, in fact, with stove plants in general, a reasonable amount of ventilation at night will be found advantageous, if care is taken to prevent draughts, and if the night be very cool, a little stronger fire-heat may be given to correct any deficiency in temperature.

If any of the Palms are pot-bound they should be given a shift at once, so that they may become well-established before winter, for though these plants do not come to a full stop in growth during the winter, yet their root-action is so much slower then, that there is greater risk of over-watering if they have been potted very late in the season. Of course, when it is desired to grow young Palms very rapidly, they may be potted whenever it is found necessary, without much attention being paid to the season of the year, because, when given extra heat and attention, they may be kept growing during the whole year, and this practice is common among trade growers, who often find it needful to grow their plants under high pressure in these days of sharp competition.

Cyanophyllum magnificum and *Sphærogyne latifolia*, two of the handsomest stove-foliage plants in cultivation, should be found in every collection where there are facilities for growing them. But to keep these two species in good condition, liberal treatment is required, both as to pot-room and moisture, for, if neglected in either of these essential points, the foliage soon becomes stunted and disfigured. If they are becoming pot-bound, an occasional watering with liquid manure will be a help, pure guano being probably the most effective fertilizer for this purpose. This should be used with caution, however, a two-inch potfull to an ordinary can of water being sufficient, if the guano is pure. The Cyanophyllums and Sphærogynes both being shade-loving plants, and also natives of the tropics, they should be furnished with somewhat similar conditions when under cultivation, but while giving them plenty of shade it will be found best to keep the plants within a short distance from the glass, so that the growth will be short-jointed, thus making the plants appear better furnished. These two plants are readily propagated by means of single-eye cuttings placed in bottom-heat and kept rather close until rooted, which is usually in from three to four weeks' time, after which they should be potted off into moderately light soil, and repotted as often as they become well-rooted, so that the growth does not at any time suffer a check, else the symmetry of the plant may be injured.

Holmesburg, Pa. *W. H. Taplin.*

Crooked Norway Maples.—It is the general experience of nurserymen that the Norway Maple does not grow as straight, when young, as the Sugar Maple. In the majority of cases there is a bend at the beginning of each year's growth, which shows in the trunk until the tree attains a considerable size. What is the cause of this crookedness? The young shoots of the Norway Maple are as straight as those of the Sugar Maple. The normal habit of growth is a true perpendicular, but next spring a side-shoot takes the lead with a curve. It is evident, then, that the central terminal bud of the Norway Maple has suffered injury in some way. This has not been caused by the cold of winter, for it is the most hardy of the maples. Every nurseryman has observed that the growth of young trees of this species stops in the latter part of July, the shoots becoming very short-jointed, and the leaves showing injury with tips crisp, as if scorched by the sun. In previous seasons I have been uncertain of the cause of this stoppage. I have occasionally found flying thrips, much resembling, and perhaps identical with, the vine fretter, but these were so few in number that I had supposed them inadequate for such a sweeping result.

Early in July of this season I found occasional thrips on the tender terminal shoots of the Norway Maple, which flew immediately upon my touching the leaf. I at once had all the leading shoots of this variety dipped in a weak solution of the kerosene emulsion. This process has been repeated three or four times in as many weeks, and the result is that the shoots have continued to make a healthy growth. I have no doubt that the terminal bud will start next spring, as straight as an arrow; and I have no longer a doubt that the thrips has been the sole cause of the stunted growth of previous years. The Sugar Maple does not seem to be affected by this pest. Neither have I found the Schwedler and the Reitenbach maples troubled by it, although they are varieties of the Norway. The Sycamore Maple does suffer to a considerable degree. But the remedy is easily applied on small trees, and on large trees it is unnecessary. *W. C. Strong.*

Newton Highlands, Mass.

Rhododendron odoratum, which is said to be a hybrid between *Rhododendron Ponticum* and one of the deciduous hardy Azaleas, was one of the chief attractions in the open-air garden at Kew for late July, when there were large masses of it flowering in great profusion. In growth it resembles the deciduous Azaleas or Swamp Honeysuckles of North America, though its foliage is somewhat different, being larger, of thicker texture and a deeper green. The flowers are Azalea-like in size and form, and are gathered into moderate-sized clusters. They are of a delicate mauve-lilac tint in the main mass of plants, but a few have as deep tinted flowers as *R. ponticum* itself. They are deliciously fragrant, and this heightens the value of the plant for the garden. Another point of value is, that it flowers at a time when the majority of the other Azaleas are on the wane, and it lasts three or four weeks in bloom. It grows well in any ordinary peaty soil, kept tolerably moist. Loudon enumerates it in his arboretum under the name of *R. azaleoides*, and he says it is the variety subdeciduum of Andrews' Botanical Repository. It is also known as *A. fragrans*. Though an old and well-known shrub at Kew, it is rarely seen in even the large tree nurseries, but now that its character is so well displayed at Kew attention may be directed to it.

Kew. *W. G.*

Pyrethrum uliginosum is now at its best and is without doubt one of the very best plants we have for cut flowers, and for garden decoration in autumn. We find that plants in moist

situations produce much larger flowers than those in dry sandy positions, and as *P. uliginosum* is a gross feeder, it needs division every second year when the soil should be well enriched with decomposed manure. If this treatment is given, the stems grow five feet high, and from the axils of every leaf a flower stem is produced, bearing a cluster of flowers, each of which is four inches across, with petals pure white, and a bright yellow disc. This plant is thoroughly hardy, and is by no means new, although we received it as such, three years ago, from Switzerland. Twenty years ago it was quite common in English gardens, but its present popularity comes from its re-introduction with so many other fine old plants that had been under a cloud during the reign of the bedding system. *P. uliginosum* is easily increased by division of the stolons which are freely produced from the old stem, and with us seeds are matured in good seasons and germinate much better when self-sown than when sown under glass. The Great Ox-Eye Daisy deserves a place in every collection of hardy plants.

Clematis paniculata, as it is here, is worth going a long distance to see. There are over 200 plants, and although only nine months old, they are from seven to eight feet high, and covered with the large panicles of fragrant white flowers. Their fragrance, in the early morning, especially reminds one of that of the Hyacinth. This plant is being distributed also under the name of *C. robusta*, an appropriate name enough, for there is no Clematis in cultivation of stronger habit, but the name *C. paniculata* is now nearly 100 years old, and it ought to have right of possession, but this is probably only another instance of an old plant under a new name. In addition to the free flowering qualities of *C. paniculata* the foliage is large, of a shining, dark green, and the plant is an excellent climber, perfectly hardy, and needs no pruning in spring, except to cut off the old flowering stems. As a plant for the decoration of the piazza there can be no better, for after the flowers are over, the prettily-awned seeds are almost equally ornamental, especially when they take on their peculiar bronzy tint.

Passaic, N. J. *O.*

Osbeck's Sumach.—The Japanese variety of *Rhus semialata*, known as the var. *Osbeckii*, again flowered profusely at the Arnold Arboretum, and when in blossom, with its many large panicles of greenish-white flowers, it was one of the most conspicuous of small-sized trees in this latitude. With the exception of the Japan Sophora (*S. Japonica*), which blooms at the same time but continues some days longer, it is the latest to flower of all the woody plants which assume the true arborescent form. The plant, like its American congeners, is a fast-growing one. With large, pinnated, dark green leaves, and broadly margined or winged petioles, it is handsome and interesting all through the summer, and in the autumn it assumes the brightest yellow and scarlet colors. A panicle of the small, greenish-white flowers is borne at the end of each branch. The panicles average nearly a foot and a half in length, with a lateral spread almost as great. The flowering period is rather short, the first flowers opening this season about July 29th, and the last August 15th. The large plant in the Arboretum bears staminate flowers, but, occasionally, pistillate or perfect flowers are borne also as the panicles sometimes produce a very few scattering fruits. This small tree gives promise of being quite hardy where the winters are much colder than at Boston.

Arnold Arboretum. *J.*

Orchid Nomenclature.—Since Lindley's time almost every Orchid has been described by Professor Reichenbach, and, as no one else appears to have preserved authentic specimens, and the herbarium of the Hamburg professor is sealed up for twenty-five years, it is difficult, in many cases, to decide what has already been described and what is really new—a difficulty rendered greater by the fact that "his papers," as the *Gardeners' Chronicle* says, "are not only extremely numerous, but scattered through a wide range of publications, in almost all European languages."

Kew has stepped forward to fill the gap. We notice a letter setting forth that the director of that establishment is willing to assist cultivators of Orchids in naming their plants in cases where difficulty arises in their correct nomenclature. A second letter points out that many of the plants described by Professor Reichenbach still exist in gardens, and requests that specimens of the same be sent for preservation. By this means a considerable number of types might be recovered, if the suggestion is acted upon, which seems likely to be the case. Orchid-growers have learned a lesson—not to send all their specimens to a private herbarium again.

A suggestion has recently been made that the Royal Horticultural Society should appoint a Professor of Orchidology, who shall look after the naming and describing of new Orchids, and to whom all questions relating to their nomenclature shall be referred. Another proposal is that a committee be appointed to determine the principles on which they shall in future be named. It seems hardly likely that the first suggestion will be acted upon, as the expense of getting together the necessary herbarium and drawings would be no inconsiderable item. The second proposal is good in its way, provided always that the decisions of the Committee are accepted and acted upon, though we do not remember that the former conference, at Liverpool, led to any very practical results. Certainly the nomenclature of Orchids is in a good deal of confusion, and is likely to remain so while growers insist upon having a name for every slight variation which occurs.

The genus Cattleya furnishes a very good illustration. The *Gardeners' Chronicle* has seen fit, after a long interval, to continue its "List of Garden Orchids," and this genus is now just completed. Turning it over we note no less than twelve varieties of *C. guttata*, whose characters are briefly given, but on reaching the very polymorphic *C. labiata*, such an array of names present themselves as to be perfectly bewildering. About nine geographical varieties are recognized, and under several of these a host of variations or polymorphisms are given. The variety Mossiæ seems the most polymorphic, having something like forty-seven sub-varieties, or polymorphisms, or whatever else they may be. The variety Trianæ follows closely behind, with something like forty-one. We wonder how they all differ, for the characters are not given—perhaps on account of want of space, as they take up something like a column and a half as it is. However, those who wish to know will now be able to find them, by the references given and the list of published figures. We note such delightful combinations as *Cattleya labiata Mossiæ Peetersii* and *C. Reineckiana superbissima*, whose correct name would appear to be *Cattleya labiata Mossiæ Reineckiana superbissima*. Such names, we should think, require a good deal of regulation.

London. *Calypso.*

Correspondence.

Forests and Civilization. The North Woods.—VII.

To the Editor of GARDEN AND FOREST:

Sir.—There have been marked changes in the thought of the people in the Adirondack region since I first began to observe things here. At that time nearly everybody thought the forests were inexhaustible, boundless and everlasting. It made no difference how much timber might be destroyed, or how great areas might be burned over and ruined, there were still illimitable, uninvaded wilds. There was then hardly any care among the guides about putting out fires, and if a visitor wanted his fire extinguished when he broke camp in the morning, his suggestion was often regarded as an impertinent and absurd interference with the affairs of the people of the woods. When a squatter wished to clear a potato-patch for the next spring's planting he fired his brush-piles in the time of greatest drought, and sent the flames roaring away through leagues of forest, not caring how far or how long they might burn. The region was being rapidly devastated by fire, and there were extensive and open depredations on the timber of the state lands. Visitors from the cities often displayed a most thoughtless and uncivilized enjoyment in destroying as much of the woods as they could during their summer stay here. There was little sign of forethought, or sense of responsibility, anywhere, regarding the value or the destiny of these mountain forests.

All this has been greatly changed. There have been few extensive fires during the last few years, and there has come to be a very general feeling among the people who live in the woods and from them, that injuries to the forests are injuries to their own means of subsistence, and are therefore to be avoided. Camp-fires are generally carefully extinguished. and the wanton destruction of trees by campers is discouraged. The old superstition that the woods are inexhaustible, has given place to the sense that things are coming to an end; that the very existence of this great summer resort is threatened, and that the permanence of its peculiar industries and revenues is no longer secure.

There is a rapidly developing feeling that the region ought to be taken care of, and that something should be done to prevent the complete extinction of the woods. These changes in the thought of the people here have been brought about, partly by the extension of the railroads into hitherto inaccessible parts of the wilderness, and the increased cutting for lumber everywhere, and partly by the influence of recent

discussions in the press. Since papers of influence have declared that "the only plan by which threatened injuries can be averted, and means provided for the permanent conservation of these invaluable forests, is the acquisition by the state of the entire Adirondack region," the minds of the people here have been turning more and more in the direction of such a change. A valuable educational work has also been carried forward among the woods-people by the chief Forest Warden and his subordinates. They remind everybody that unless the forests are preserved, the occupation and livelihood of the inhabitants of the country here will be gone. "No woods, no tourists, no living for you." The most intelligent and observant men here are coming to be in favor of the gradual acquisition of the entire region by the state. But nobody wants the state to buy the land before the timber is cut off! The lumbermen want the existing crop for themselves. But some arrangement could doubtless be made to purchase considerable tracts for the state as soon as the timber now standing on them is utilized. Then, if fire is kept out, the forest will soon come back again, and the state can take care of it if her people are wise enough.

There has been comparatively little depredation upon timber on the state lands during the last few years. Some ne'er-do-wells steal a tree or two at a time for shingles, or to sell, and some lumbermen still buy logs from men who are known by everybody not to own a foot of land or a stick of timber anywhere, but the pillaging of the state timber lands has greatly declined. The Forest Commission has successfully prosecuted some offenders, and has successfully discouraged others. The Bill providing for a change of venue in suits for trespass on state lands, which the Commission brought forward in the Legislature last winter, was a good measure, and should have become law. Such cases cannot always be fairly tried in the vicinage where the depredations were committed.

The extensive and increased cuttings which thoughtful men deplore is, of course, not on state lands but on those of private owners, who have a right to cut their own timber whenever they choose. They have also a legal right to cut it *as* they choose, and to destroy forest-conditions all over their own territory, if they are so unintelligent as to wish to do that. What observing and public-spirited men regret is, that so much of the forest is cut off with so little thought of the future and its needs. There is really no sound objection to cutting off the woods if it were done in the right way, for they would soon be reproduced. But much of it is done thoughtlessly, carelessly, stupidly; without the application of judgment, intelligence or common sense. I think we shall have to interest, engage and educate the lumbermen, and get them to help us in the effort to establish a more enlightened and practical policy and method in cutting off timber, and maintaining permanent forest-conditions, so as to have a succession of crops. They ought to feel more interest than most other people in the permanent preservation of the forests as a source of revenue and profit to themselves individually and to their children, but, unfortunately, they do not always act from enlightened self-interest, any more than the rest of us.

While these mountain forests are in the hands of private owners we must expect that they will be utilized, as other property is, for their benefit, and it is not reasonable to denounce them for managing their possessions for profit, as other people do. Here are two lines of work, the encouragement of forethought and wise management among lumbermen and private owners of forest lands, and the discussion of the policy of the gradual extension of state ownership of land in the Adirondack region.

The Conemaugh catastrophe has had a distinct influence here in stimulating thought about the relation of mountain forests to streams and their flow, and the effect of mountain denudation in producing destructive torrents and freshets, and intelligent men in the wilderness, and in the towns along the Hudson, are giving these subjects more attention than ever before. It is not quite plain to them just how this disaster teaches the lesson drawn by my friend Major Powell, "that forests are a disadvantage to irrigation where the chief precipitation is snow." But the question of the quantity of water that might be saved, by destroying the mountain forests of California and Colorado, is not practically important. If forest-conditions are destroyed on the mountains, in which the streams to be used in irrigation have their sources, evil and destructive forces which no human power can control will be liberated and set in motion. The soil will be carried down from the mountain slopes. The irrigation reservoirs will be filled up, and the fertile lands below buried under sand and gravel. The streams will be ruinous torrents for a short time each year, when the snows melt, or the rains fall, and their channels will be dusty chasms during the season when water is most needed. The air will be filled with dust from the perpetual erosion of the hills. The regions which might be the permanent seat of vast and prosperous populations will be wrecked, desolate and accursed. The laws and forces of nature will not make exceptions in our favor, though we are a great country.

But why should our friends, the geologists and hydraulic engineers be eager for the destruction of the forests on our western mountains which still belong to the nation? The forests are not in their way. Their permanent conservation and proper management will in no way interfere with the great expansion of engineering and constructive work for the storage and distribution of water, upon which it is evident that we are about to enter. There will be plenty of business for the engineers for a great while to come, and vast revenues will be appropriated for its cost. The magnitude of the possibilities before us is indeed stimulating to the sanest mind, and it will not be wonderful if some enthusiasts conclude that arid lands are better for agriculture than those to which nature has given an adequate rainfall, and that the world is to be saved by being sufficiently dammed. But the fact remains that mountain forests are the natural storage reservoirs for the water that falls upon them, and that they are indispensable to the integrity and permanence of the streams which have their sources in them.

J. B. Harrison,
Lower Saranac, New York. Cor. Sec. American Forestry Congress.

The Practicability of an Improved Use of Popular Plant-Names.

To the Editor of GARDEN AND FOREST:

Sir.—Popular plant names are a part of a great mass of descriptive terms, applied to familiar or conspicuous natural objects, and form an important part of every language. They seem to be as necessary to the people at large who want names that easily become familiar, as "scientific" names are to the student who must have a universally understood system and mode of expression.

Botanists pay less attention to popular names than ornithologists, entomologists and other students of natural science. Why they should may perhaps be explained by circumstances connected with the early history of botany. The study of plants, first confined to the physician, who considered them for their real or supposed medical virtues, was for a time thrown into great confusion from lack of means for identification. Later students began to work out a system of classification and at length botany was established as a science apart from medicine. But in the mean time the early physician had degenerated into the herbalist, with his quackery and superstition, and both he and his vocabulary were held in contempt by the botanist. This early antagonism resulted in a separation between the popular and scientific names of plants.

Some popular names have come to us from a very early time, while others, more recent, can be traced to many different sources. We have not the various dialects that are responsible for many of the seemingly trivial names in English books, but from all parts of the world names have come to us with the plants to which they belong; while others have become attached to new plants. Purely American names have been adopted from Indian languages or corruptions of them, and many have originated among our people.

There are many common names which are used without practical confusion or inconvenience of any kind; such, for instance, as Quince, Elm, Wheat, Cabbage, Cocoanut. That there is a much larger number in the use of which there must be uncertainty and consequent confusion, is not a sufficient reason for outlawing all such names. If it were, scientific names must also be outlawed by the same reasoning, for even the best botanists often make changes in what is regarded as the correct name of a plant, and often append to the name of a particular plant a long list of synonyms.

Considerable attention has been given to popular plant names in England, and several books are published there on their origin, meaning and use; but the more important of these are written from the standpoint of the philologist and archæologist, and while all deplore the uncertainty and confusion in the use of these names, little is done to correct it. It is often added to when a great number are given, by not specifying those worthy of general use.

We, in America, stand well to lead in establishing the correct use of popular names, for our text books and catalogues agree in the use and application of many of them, and we are comparatively free from complications that perplex our English friends.

The superceding of the system of scientific names by a system of popular names is not to be urged.

The ultimate object should be to establish for every plant one name which for good and sufficient reasons shall be known as the standard common name; all others for the same plant being made subordinate of it. Among the reasons for adopting the standard name would be that it is more frequently and widely used than another; that it does not conflict with the name adopted for another plant; that it has special fitness as a descriptive term; that it is descriptive of peculiarities in the structure and manner of growth of the plant or that it indicates its association with some interesting event. Priority should also be considered but would not necessarily establish the use of a name.

Most conspicuous or familiar plants have popular names, but if botanists, when describing a new plant, would publish with the scientific name an appropriate native appellation, or if necessary invent a name for popular use, they would do much to aid the purpose. A translation of the botanical name which is usually an abbreviated descriptive term, is often akward and unweildy and would seldom be the best popular name that could be selected.

If the introducer of a new plant proposes a good and appropriate common name, the distributor will commonly be glad to adopt it, well knowing the value as a matter of trade of such a name. If one in use in its native habitat or elsewhere, or one given by the discoverer or botanist who classified it, is not available, it would be the duty of the distributor to invent one, short, easily understood and pronounced, descriptive of the plant in some particular, or referring to some association. If the botanical name only is used it is copied at first, but if the plant is widely distributed and popular it is sure to receive a popular name, often several in different localities.

A complete botanical name with a generic and specific name of the same character is seldom if ever used in a popular way, but the generic is often adopted, and with it an English prefix to distinguish it from other species. Such names when established are popular names, and often very serviceable, but it does not seem that the union of Latin and English can be as desirable as simple and expressive English names which may be, and so often are, used to express the same things as Latin generic and specific names.

When a cultivator creates a new variety and gives it a reasonable name, that name should be respected by everybody, and it should become odious for anyone afterwards to attempt to give the plant a new name, especially if this is done for a commercial purpose. A person who applies to a plant already having a good and sufficient name, one that better suits his individual fancy, and publishes it, should be held guilty of an inexcusable act. Only when a plant has a very conspicuously unfit or inelegant name should an attempt be made to give it another, nor should it even in such a case be made except with the approval of some notable body.

We need a work in which every name in use among the people to any considerable extent will be recorded and explained. Such a work would be valuable for reference for every one wishing to determine the meaning and application of unfamiliar names, but its highest value would be in its establishing a standard. It might be the work of an individual but better of an organization. However undertaken, the help would be needed of many specialists in sympathy with its objects, in every branch of botany and horticulture.

Brookline, Mass. *Warren H. Manning.*

[A uniform vernacular nomenclature for all plants is, of course, desirable, but the difficulty of learning and using scientific names is greatly exaggerated. Kalmia for example, is now used almost as generally as Laurel, and is not more difficult to remember, and, when it is used, there is no doubt as to what plant is intended, while Laurel is used to designate at least half a dozen different plants. In one part of this country Ivy means Kalmia; in another it means Ampelopsis or Rhus, while the true Ivy is an entirely different plant. That Latin names may be learned and used generally, is shown by such names as Spiræa, Paulownia, Rhododendron, Azalea, Euonymus, Fuchsia, Dahlia, Coleus, Coreopsis, Weigelia, Victoria, Begonia, Allamanda, Stephanotis, Cattleya, Mahonia, Ailanthus, Arbutus, and so forth. Such names are as familiar and just as easily remembered as many vernacular names which are used indifferently, sometimes, for a dozen distinct plants, and, therefore, when used, do not convey any clear idea of the object spoken of. Latin names only appear pedantic when they are unfamiliar, and while it is, of course, undesirable to substitute a Latin for a common name, which has become a recognized part of modern language, it might be a misfortune if English names were invented for all newly discovered or introduced plants, in addition to the Latin ones, bestowed upon them by scientific botanists, and as easy to learn as new English names.

In the case of new varieties of garden plants, an English name is preferable to a Latinized one, and the custom of giving such names now prevails, or should prevail. One reason for this is that these varieties may be distinct, for garden purposes, while they are practically identical in botanical characters, so that they do not deserve distinct botanical names.—ED.]

Bits of Color.

To Editor of the GARDEN AND FOREST:

Sir.—We all return to the city too soon for the full glory of the foliage, but in August, even, there is much beauty to be seen. Autumnal coloring is not an effect of frost; it is rather a ripening as of the cheek of an apple. Frost withers, oxidation colors, so, at this comparatively early season, one will note elegant bits of color. A Sugar-Maple, otherwise green, will show one branch of glowing crimson. We have no Oaks, or Walnuts, or Chestnuts here, but the Elms grow yellow or russet. The wayside Ferns are rich in umber or sienna. The Ostrich Fern throws up its rigid plume of dark olive-green.

Some of the deepest colors I have noticed are afforded by the leaves of wild Sarsaparilla (*Aralia nudicaulis* and *A. racemosa*). These are of a very sombre purple. The same is true of the Virginian Anemone, whose tall fruit spikes along the roadsides look not unlike cannon sponges. In any account of autumnal colors the Golden-rods must be included. Here they abound and give a mellow glow to whole hillsides. They nod over the borders of forest-trails, and are of infinite variety of form, strict spikes, graceful wands, or broad, flat cymes. The Asters, too, begin to light up their pale stars of blue or white. Among the fruits we have the scarlet of the ever-present Bunch-berry, the fine red globes of the *Viburnum Opulus*, the deep-blue clusters of the Clintonia, or the single glowing pod of the Trillium. Some flowers have a second blooming. Thus we see everywhere the acrid or tall Butter-cup in flower, and we have even found the dwarf Cornel and the pretty Linnæa. Its English name of Twin-flower, it shares with the Mitchella. Everywhere before the houses here there is a tree of Crab-apples, very rosy and charming. They are, apparently, grown only for ornament. Regretfully we record a bit of vandalism: the ruthless mowing down of the wayside shrubbery. It is with a pang that we see this reckless destruction of lovely masses of foliage, the graceful Sumach, the feathery Ferns, young Alders, Osiers, Viburnums, Elders and Cherries. What a misapplication of the word improvement! Last year, in Orange County, New York, we were told that such destruction was enforced by law. If such is the case it is time to look after the law-makers.

Sugar Hill, N. H. *W. Whitman Bailey.*

Recent Plant Portraits.

Botanical Magazine for August:

STAPELIA GIGANTEA, *t.* 7068; the great flowered species discovered thirty years ago in Zululand, and more lately found in Namaqua Land, on the opposite side of the African Continent. The corolla is twelve to fourteen inches broad.

CATASETUM GARNETTIANUM, *t.* 7069; one of the Orchids which have so much scientific interest on account of variation of the perianth, due to sexual dimorphism.

GREVILLEA ASPLENIFOLIA, *t.* 7070; a species sent from New South Wales early in the present century, and well-known in green-houses.

BERBERIS ANGULOSA, *t.* 7071; a rare Himalayan species with the largest flowers and fruit of any of the thirteen species found on that range. In Sikkim it is a shrub four feet or more in height, and growing at elevations of from 11,000 to 13,000 feet, where it forms a striking object in autumn from the rich golden and red coloring of its foliage. The fruit is edible and less acid than in the common species.

ANOIGANTHUS BREVIFOLIUS, *t.* 7072; an acceptable addition to cultivated Cape bulbs. The perianth is a bright yellow, an inch to an inch and a half long.

Notes.

The occurrence of morphine in *Eschschlotzia Californica* has been recorded by Baudet and Adrian.

It is noted in several instances this year that where Potatoes were fertilized with potash salts the blight has been less prevalent.

Professor Bailey reports in the *American Garden* that the Crandall Currant has decided merits as a fruit for the home garden. It is hardly a "fixed" variety, however, and only the best plants should be used as stock for propagating.

Colonel Pearson writes that the copper sulphate mixtures have again proved themselves preventive of both rot and mildew even in this exceptionally wet summer. The grape-crop about Vineland is, however, almost a total failure, even where the clusters were bagged, and bagged early.

A black-seeded Maize, with cobs of various colors, from Bolivia and Mexico, interests American visitors at the Paris Exposition. In Bolivia this grain is used for making *chica*, the popular fermented beverage of the country, as, indeed, of most of the South American republics.

The annual Chrysanthemum Show of the New Jersey Floricultural Society will be held at Orange on the 12th, 13th and 14th of November. The President, Mr. James R. Pitcher, of Short Hills, New Jersey, has sent us a schedule of premiums, which are liberal, and the exhibition promises to be one of exceptional merit.

Professor Arthur has discovered that the red Wheat-rust is not a stage of the black rust (*Puccinia Graminis*), as has been generally held, but of *P. Rubigo vera*, a rust which does not need the Barberry go-between for its reproductive stages. This relieves mycologists from some awkward attempts to explain how there happens to be so very much rust on the grain where there are so few Barberries.

The French Government has made Professor C. V. Riley a Chevalier of the Legion of Honor as a deserved compliment for his effective studies in economical entomology. His researches have not only been of advantage to the farmers and fruit-growers of the United States, but he discovered that the phylloxera was an American insect, and identical with the pest which had proved so disastrous to French vineyards. He also introduced into France the spraying-nozzle which bears his name, and which, with certain modifications, is used in that country to counteract the mildew of the vine.

Professor Beal finds that the peculiar markings in birdseye Maple do not occur in young trees up to about three inches in diameter, nor very high up in trees which are very much pitted at the base. A specimen taken fifty feet above the ground showed no trace of birdseye, while another from near the base of the same tree was very strongly marked. If the cause of these formations could be discovered and used to produce the marks it would add greatly to the market value of the timber, for the wood of this Maple and of other trees somewhat similarly marked is comparatively scarce and in great demand for veneers.

Mr. Charles H. Shinn warns us that when the California papers give accounts of immense Redwood trees that have been cut, they too often refer to the giant Sequoias. There are many specimens of *S. gigantea* in the Sierra forests of Fresno and Tulare, and they are being destroyed rapidly and their timber sold as redwood in the San Joaquin Valley. The so-called Redwood which was stated to be twenty-eight and a half feet in diameter was probably one of these trees. The famous Felton Redwood is twenty feet in diameter and 366 feet high; and, although there may be stumps of Redwood with a diameter exceeding this, Mr. Shinn does not know of any larger tree of this species, *S. sempervirens*, now standing in California forests.

The first section of the Charles River Embankment, an important feature of Boston's public park system, is completed. It lies between the two lower bridges to Cambridge, with a length of half a mile. It adjoins a crowded quarter chiefly occupied by the tenement-house classes, and is of great sanitary value. Mr. Olmsted's design is appropriately simple; it comprises the elements of a wide promenade along the river-wall, adjoined by slopes of turf with masses of trees and shrubbery, mostly of common native species. There are two landings, with floats for boats and steam-launches. At one end of the embankment is a public open-air athletic institution, called the Charlesbank Gymnasium, the first of its kind in America; it has already proved a great success. At the other end an exercise place for women and girls is to be laid out.

A correspondent, whose patience has been tried in the matter of labels for such plants as Gladioli, Irises, and the like, writes that her gardener has hit upon a contrivance which has proved a great comfort. He takes a stout bit of telegraph-wire, some two feet long, bends it to a ring at the top, which is secured by a few spiral twists, leaving a straight, slender metal rod, with an eye at one end. This is thrust down deeply beside the plant, and a wooden or metallic label is attached to the eye with a fine copper-wire. The rod and eye is not a new device (Garden and Forest, vol. i., p. 146), but this method of constructing it will be new to many readers, and they will find it better than tall wooden sticks, which get pulled out or broken off. There are many plants to which labels cannot be satisfactorily attached, and if the wire is set in firmly it will remain as long as the plant by its side.

Professor Scribner read a paper, at Toronto, before the Society for Promoting Agricultural Science, in which he spoke of the Grasses on the bare summits of the southern Appalachian Mountains. These treeless domes, concerning which Professor Plumb not long ago wrote an interesting letter for Garden and Forest (p. 382), are called by the inhabitants "Balds," or "Grassy Balds," and are highly prized as grazing lands. Professor Scribner found twenty-five species of Grasses on Roan Mountain, many of them, as for example Timothy and Orchard Grass, evidently introduced, but now naturalized. The greater portion of the turf, however, was formed of Mountain Oat-grass (*Danthonia compressa*). Where this grass occurs in quantity in New England it is taken as a sign of poor or worn out land, but on these mountains it deserves the highest consideration. The condition of the stock which grazes on these meadows among the clouds proves the value of this grass as a food, and an analysis made by Dr. Stone, of the Tennessee Experiment Station, shows that it contains forty per cent. more of protein and fifty per cent. more of fat than Timothy or Orchard Grass.

Professor Burrill has detected a new bacterial disease of Indian Corn which shows itself first in a dwarfed condition of the young plants over areas varying in size from a few square rods to an acre or more. After the tassels are formed, the disease may be found scattered throughout the field in single plants; the affected stalks, and especially their lower leaves, being yellow and smaller than the healthy ones. In anything like severe cases, at least half of the roots are injured and often dead, the lower portion of the stalk will be found dead or dying, and presenting a dark color when split. The disease organisms are found in great numbers on, and within, the affected parts, in many cases collected in gelatinous masses consisting of the bacteria held together by a stiff mucilaginous substance which they exude. Too little is known of the disease to suggest any remedy, but as it is probable that the germs live through the winter in the soil, the young Corn would be liable to suffer more if planted in fields where the disease had prevailed the year before. It is noted that the disease is usually the worst where Corn has succeeded Corn. The disease is a very prevalent one, and may have existed for a long time. It is not always destructive enough to attract attention, but not infrequently it occasions very serious loss.

Mr. B. E. Fernow, Chief of the Forestry Division, read a paper at the late meeting of the American Association for the Advancement of Science, at Toronto, on National Interest in National Resources—a subject suggested by recent action on the part of the Government in regard to irrigation and persistent inaction in regard to the forests of the national domain. Mr. Fernow showed very clearly why our forests constituted one of our national resources, which demand the continued care and fostering administration of the state. In commenting on the fitful and illogical way in which the nation deals with its resources, Mr. Fernow said: "While our Government is ready to go to war in order to protect its fisheries, it has never even known the value as food-supply of the game which has been killed. Whole races of animals have been extirpated before there was population enough to require the meat. While with one hand we pay exorbitant prices in land and wasted energy to get the plains re-forested, and that with poor success, with the other hand we offer a premium for forest-destruction in mountains by leaving them without proper administration. And now we propose to establish irrigation-systems, neglecting to provide first for those conditions which assure a regulated water-supply—namely, by forest-preservation."